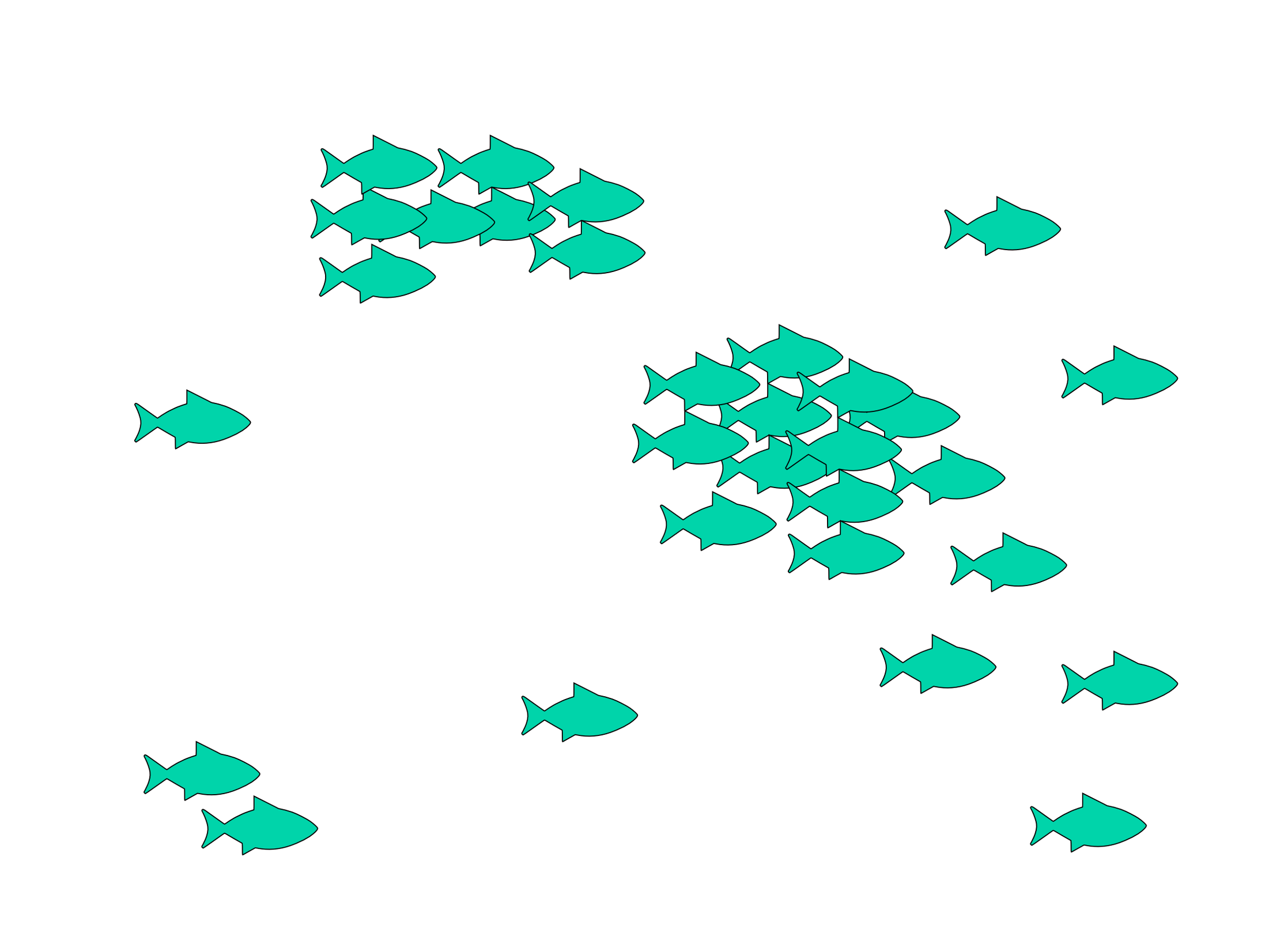
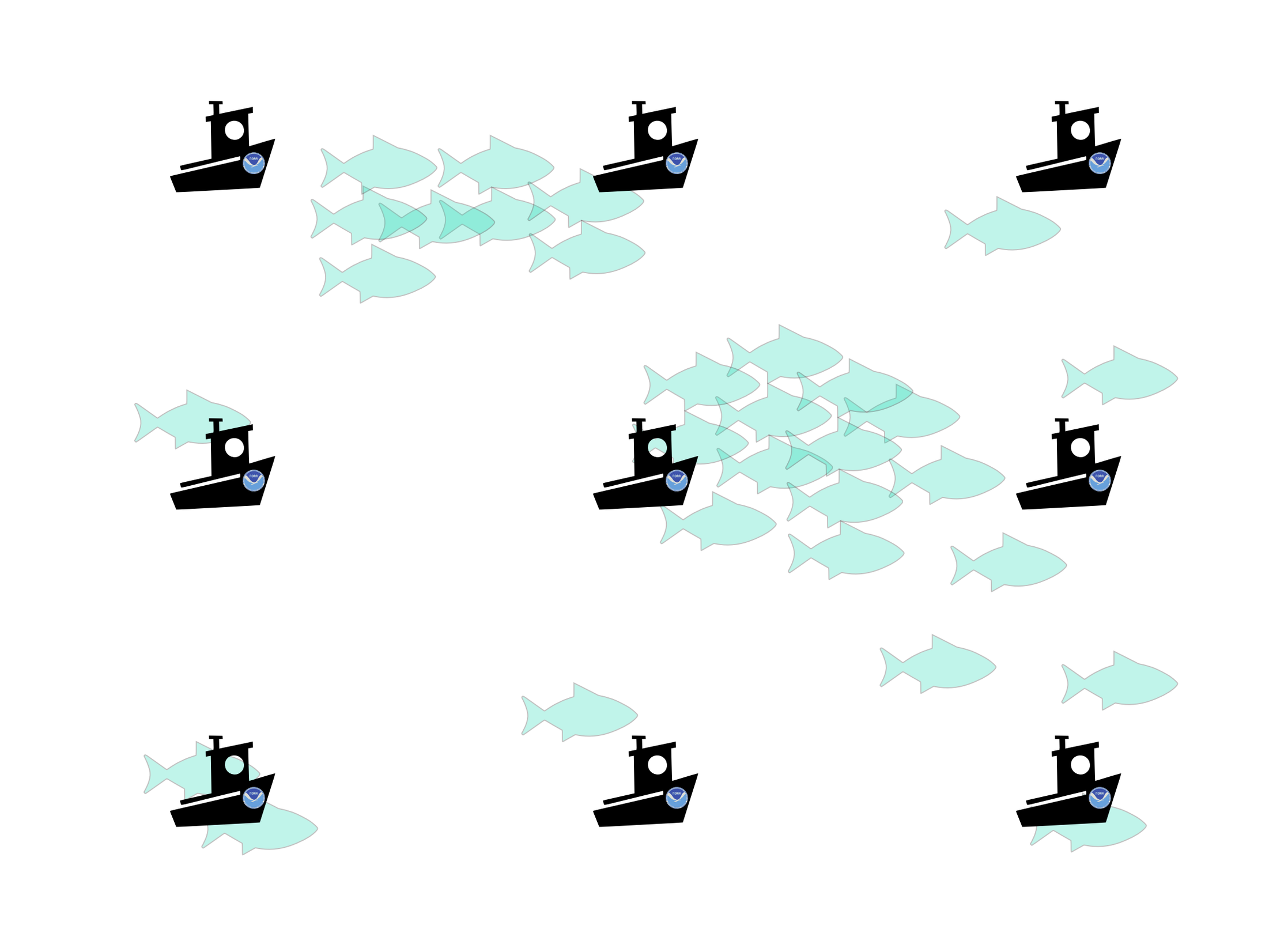
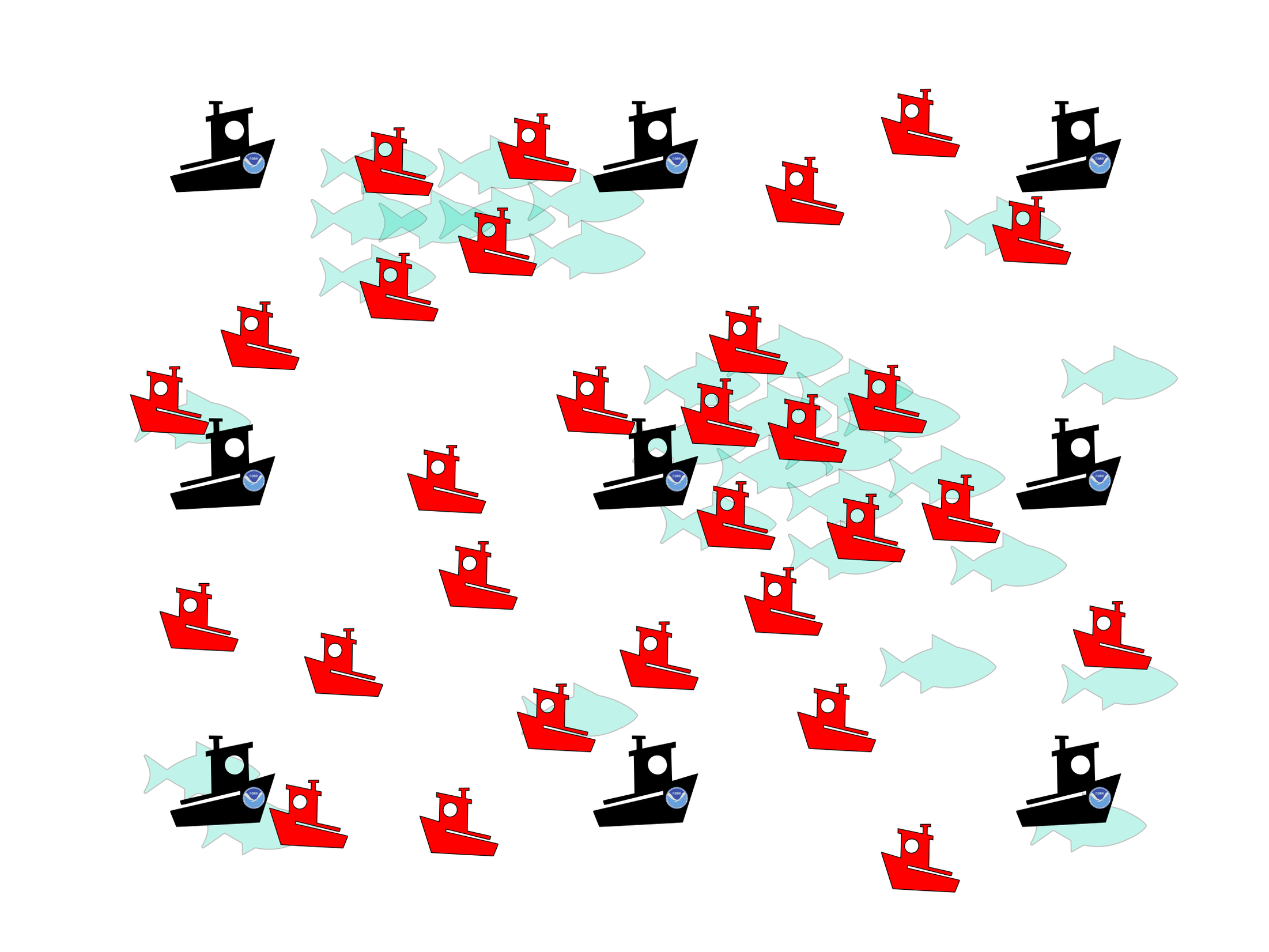
Standardizing spatially explicit fishery catch data

John Best

University of Washington

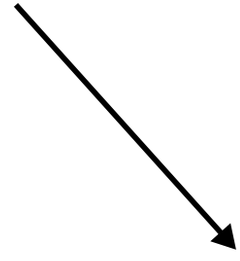




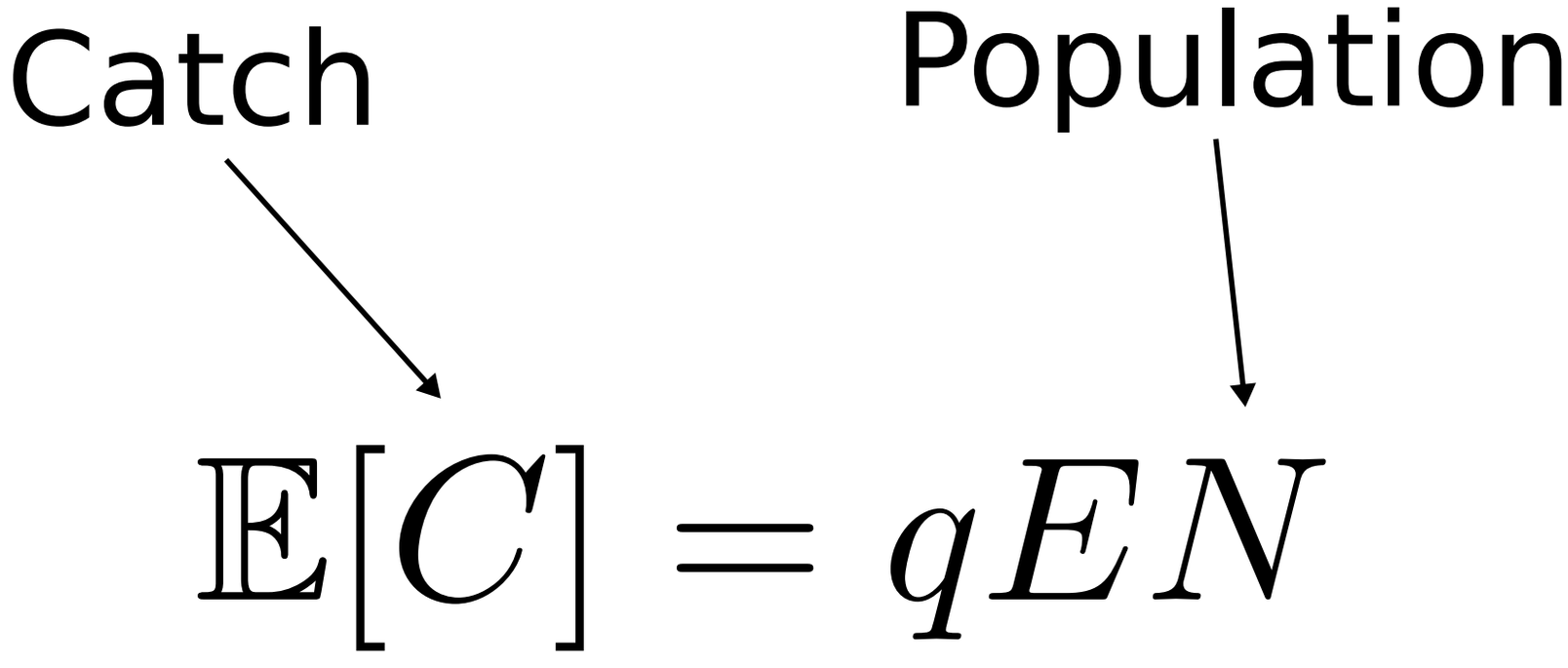


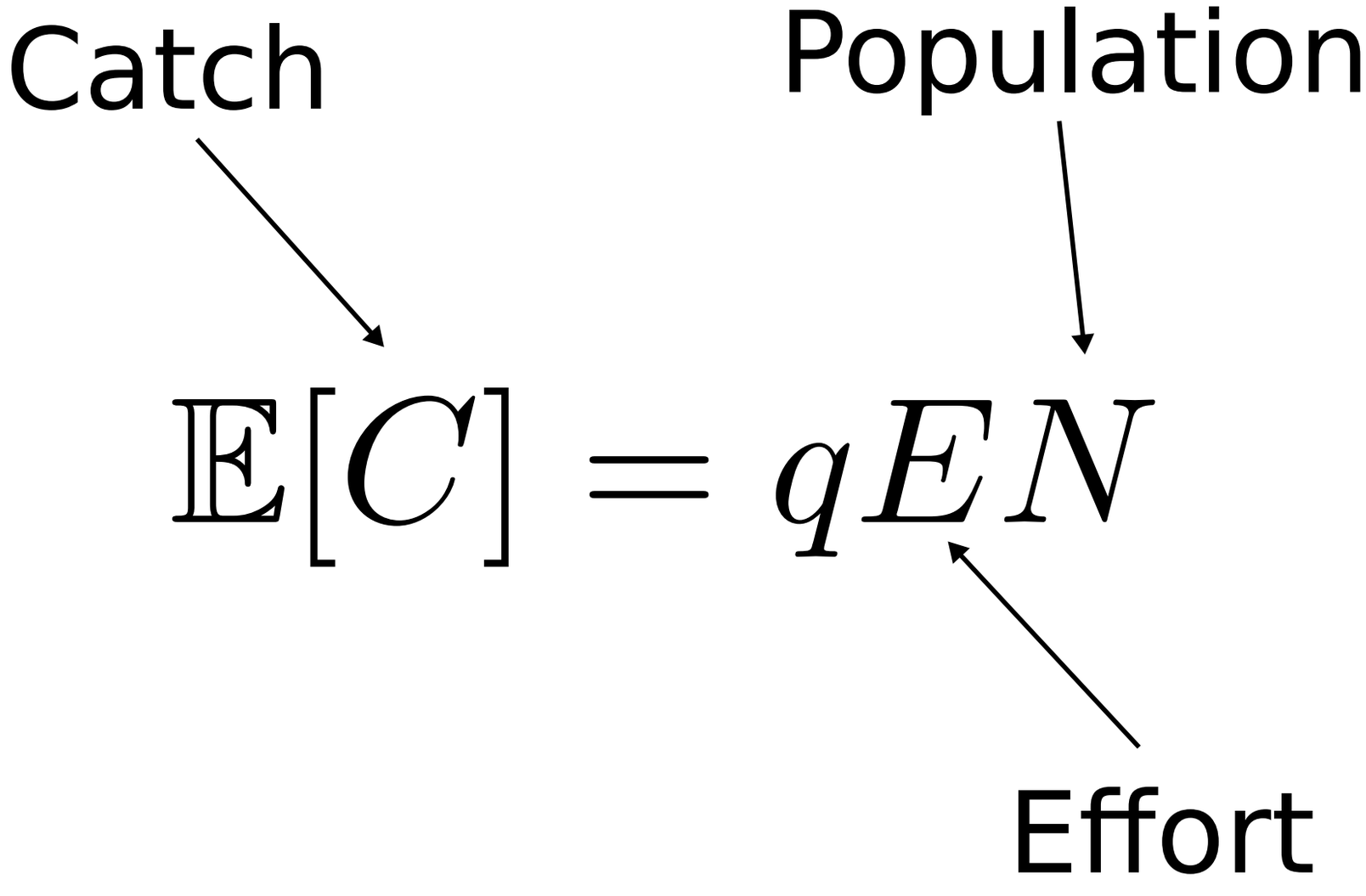
$$\mathbb{E}[C] = qEN$$

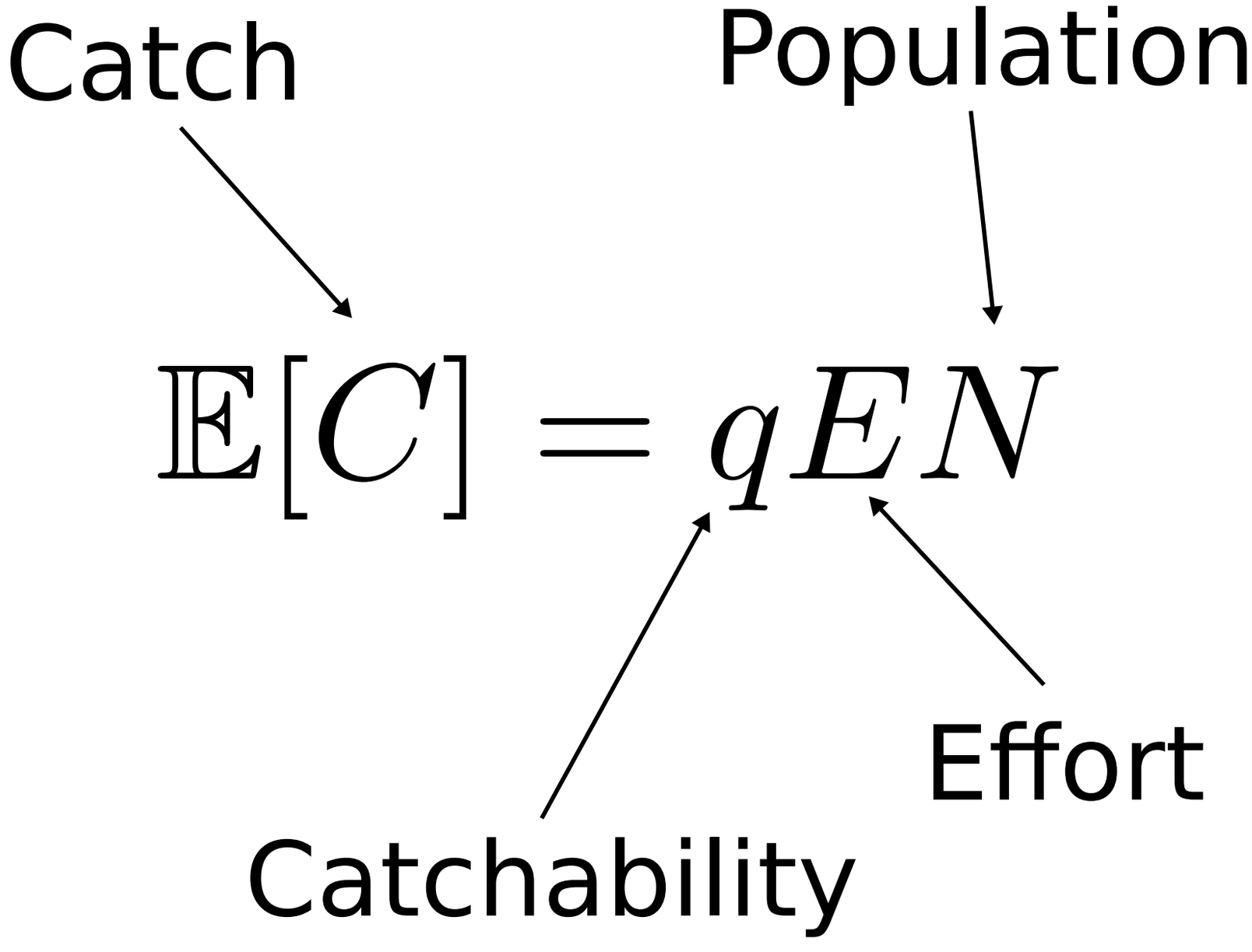
Catch

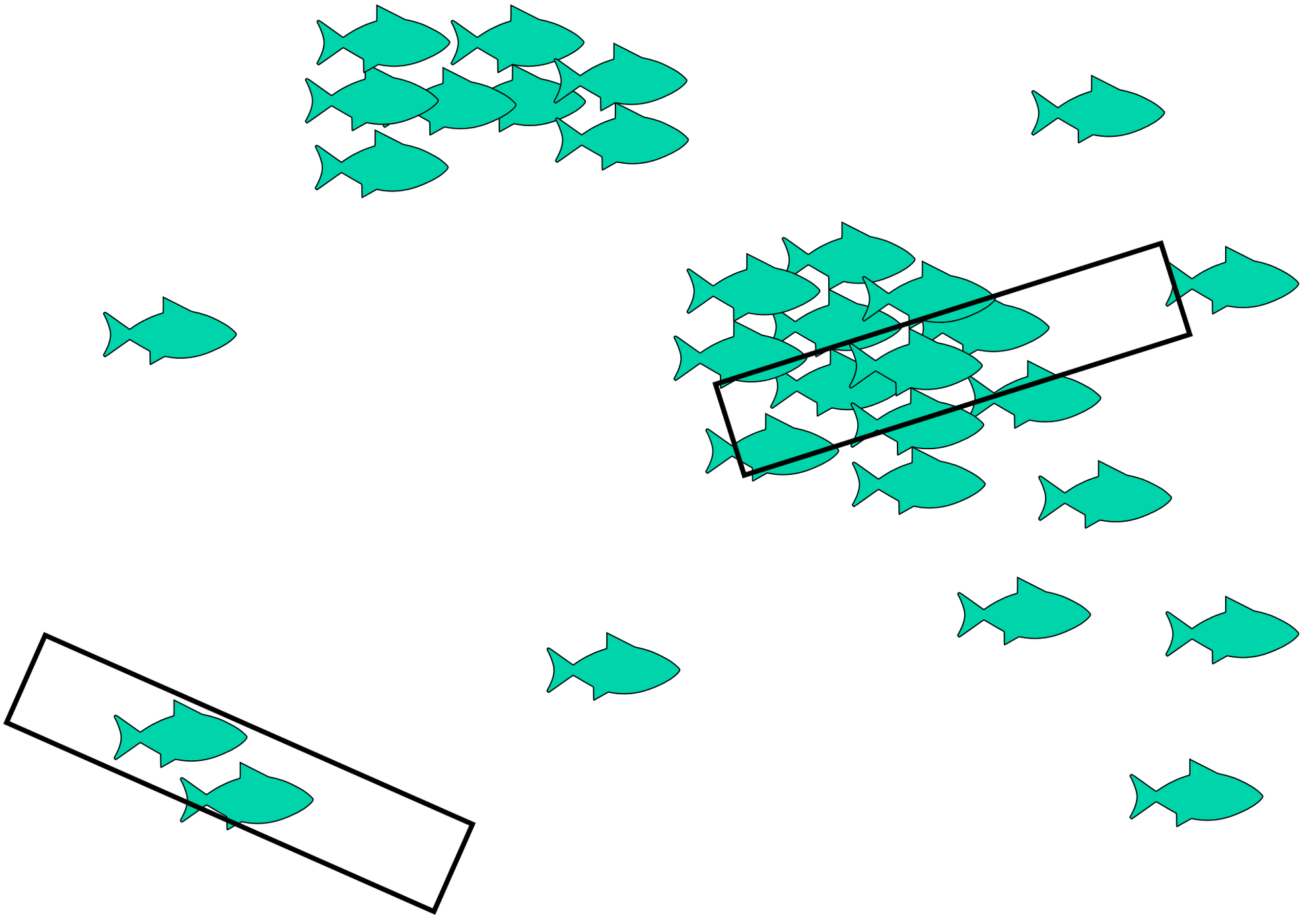


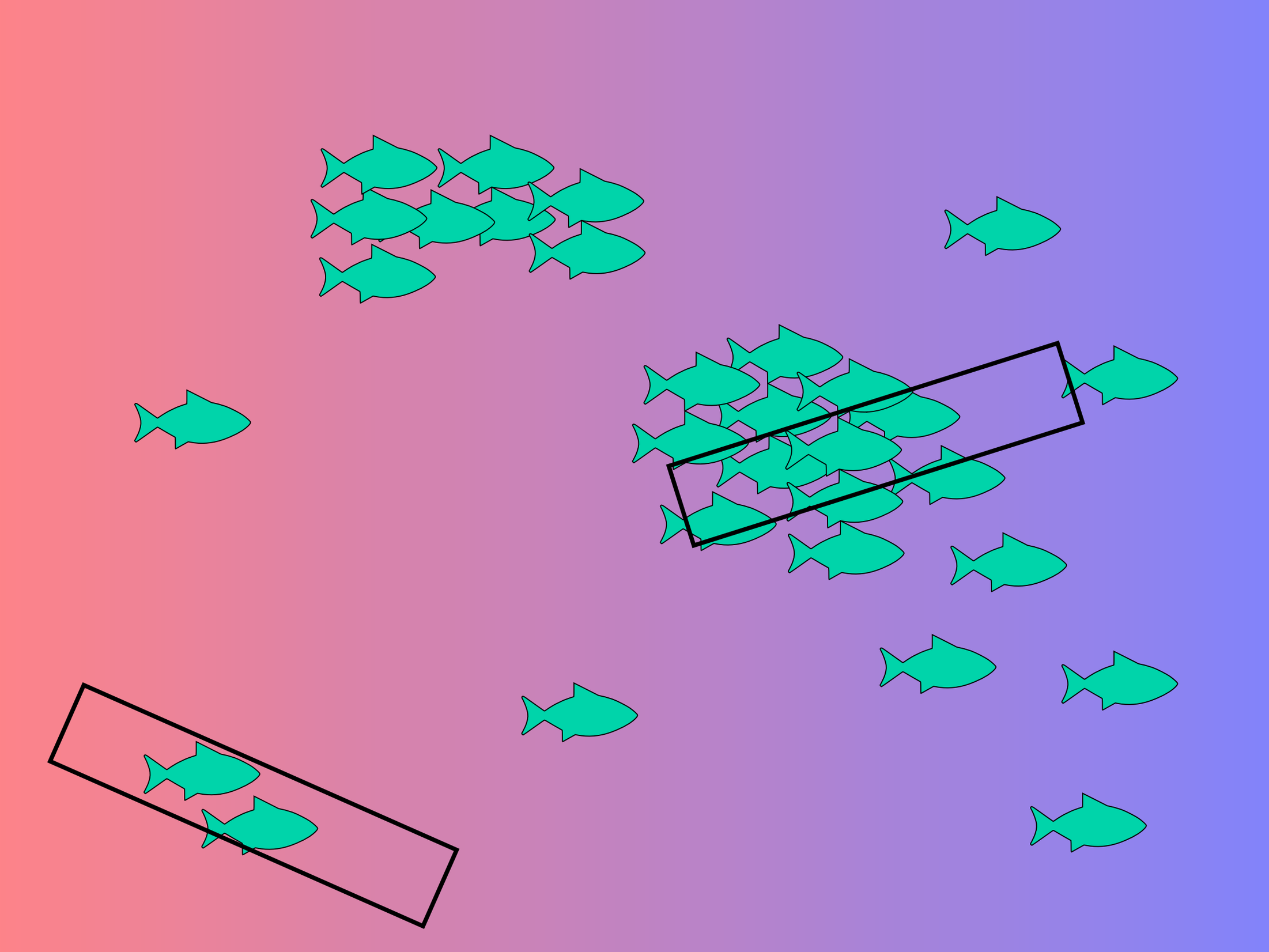
$$\mathbb{E}[C] = qEN$$

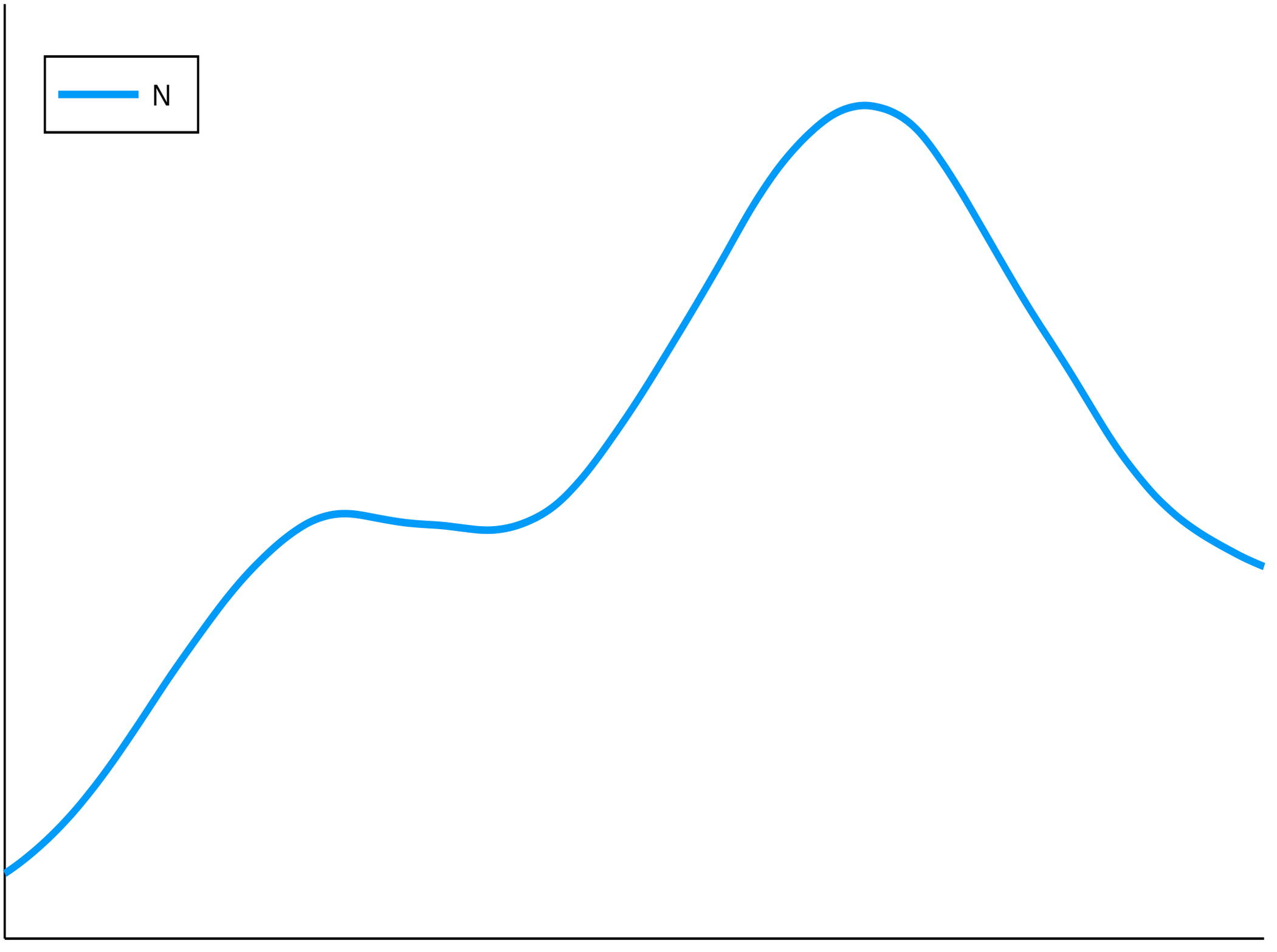

Catch
Population
$\mathbb{E}[C] = qEN$

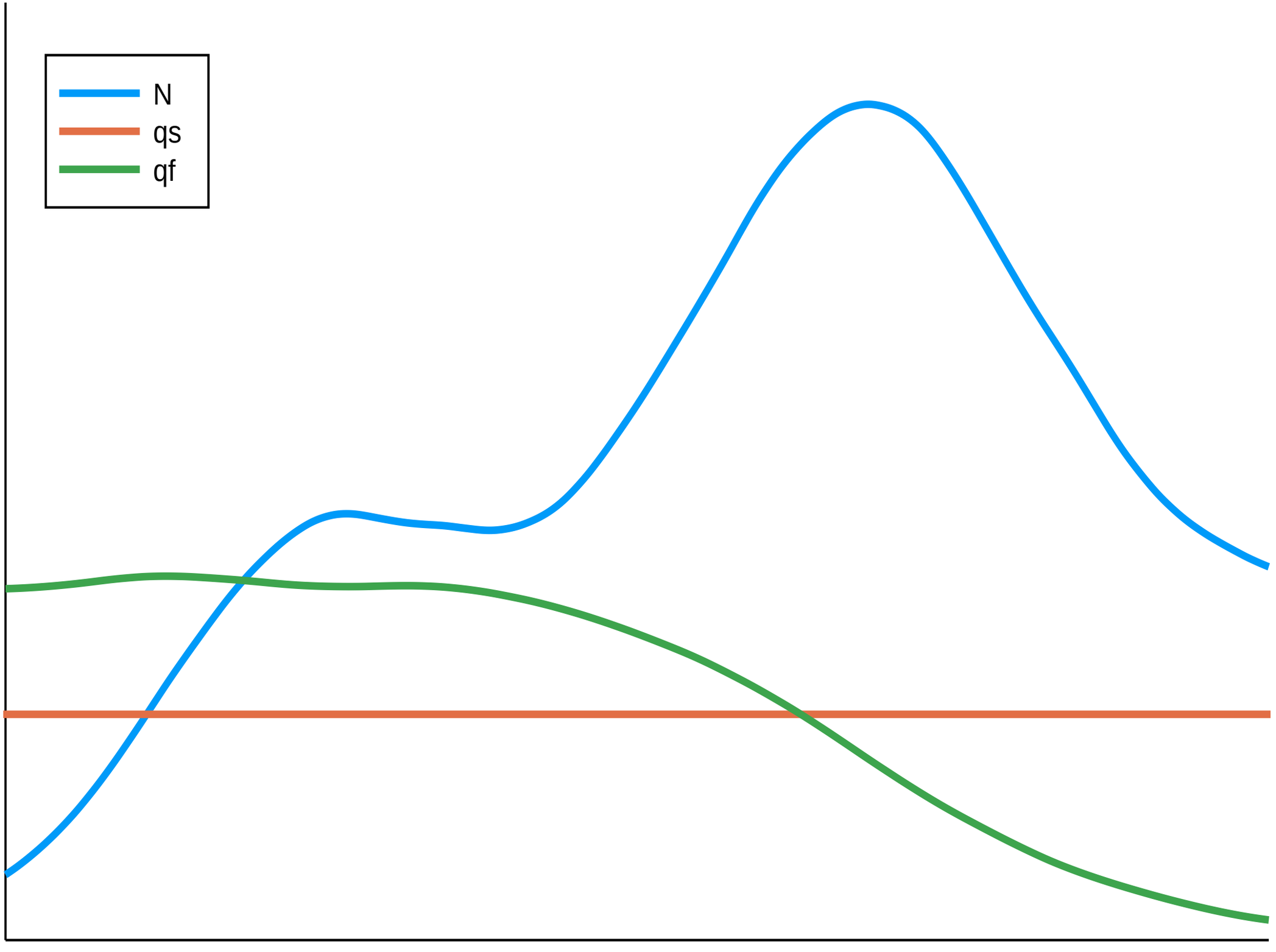

Catch
Population
$\mathbb{E}[C] = qEN$
Effort

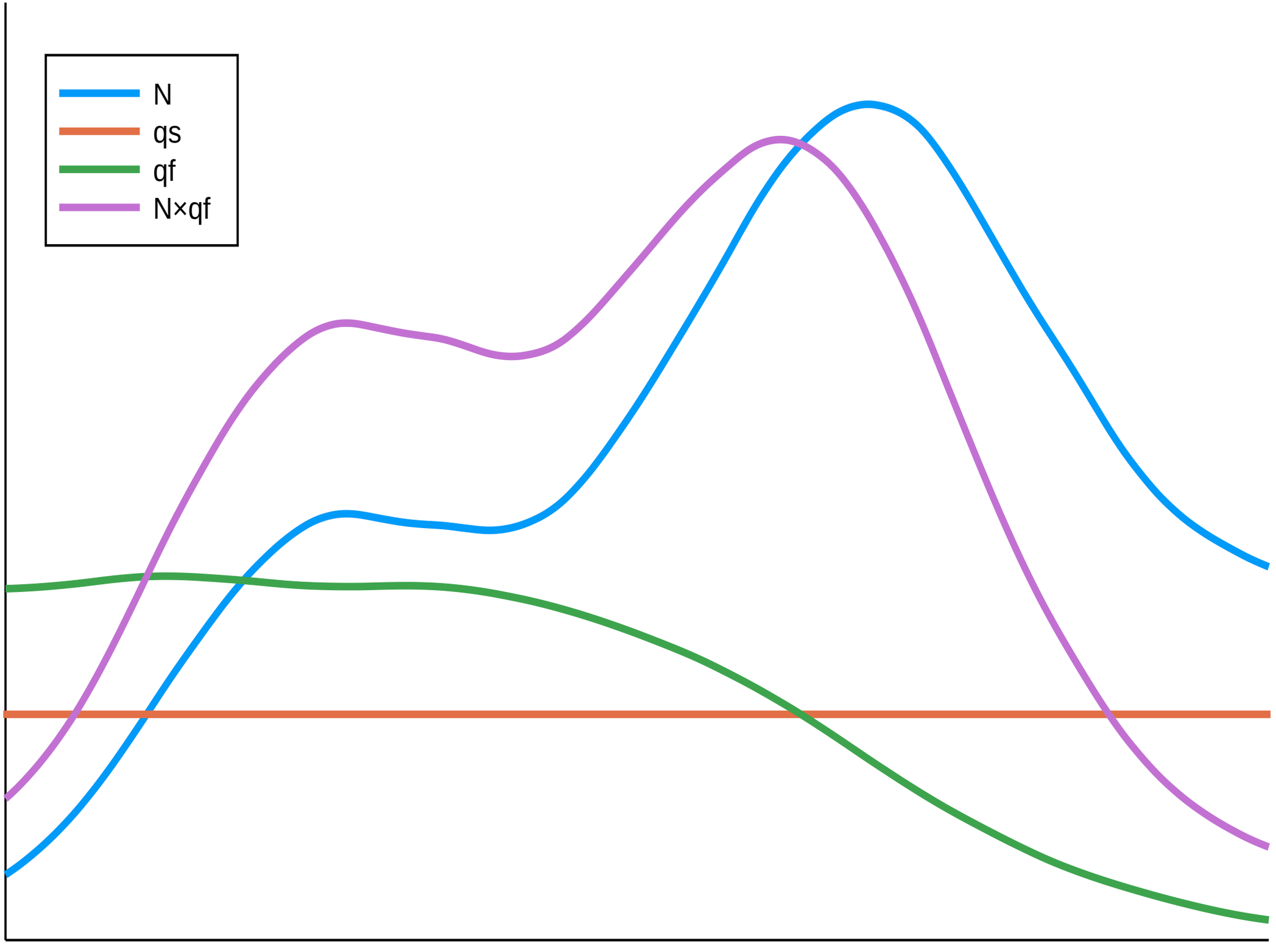

Catch
Population
$\mathbb{E}[C] = qEN$
Catchability
Effort

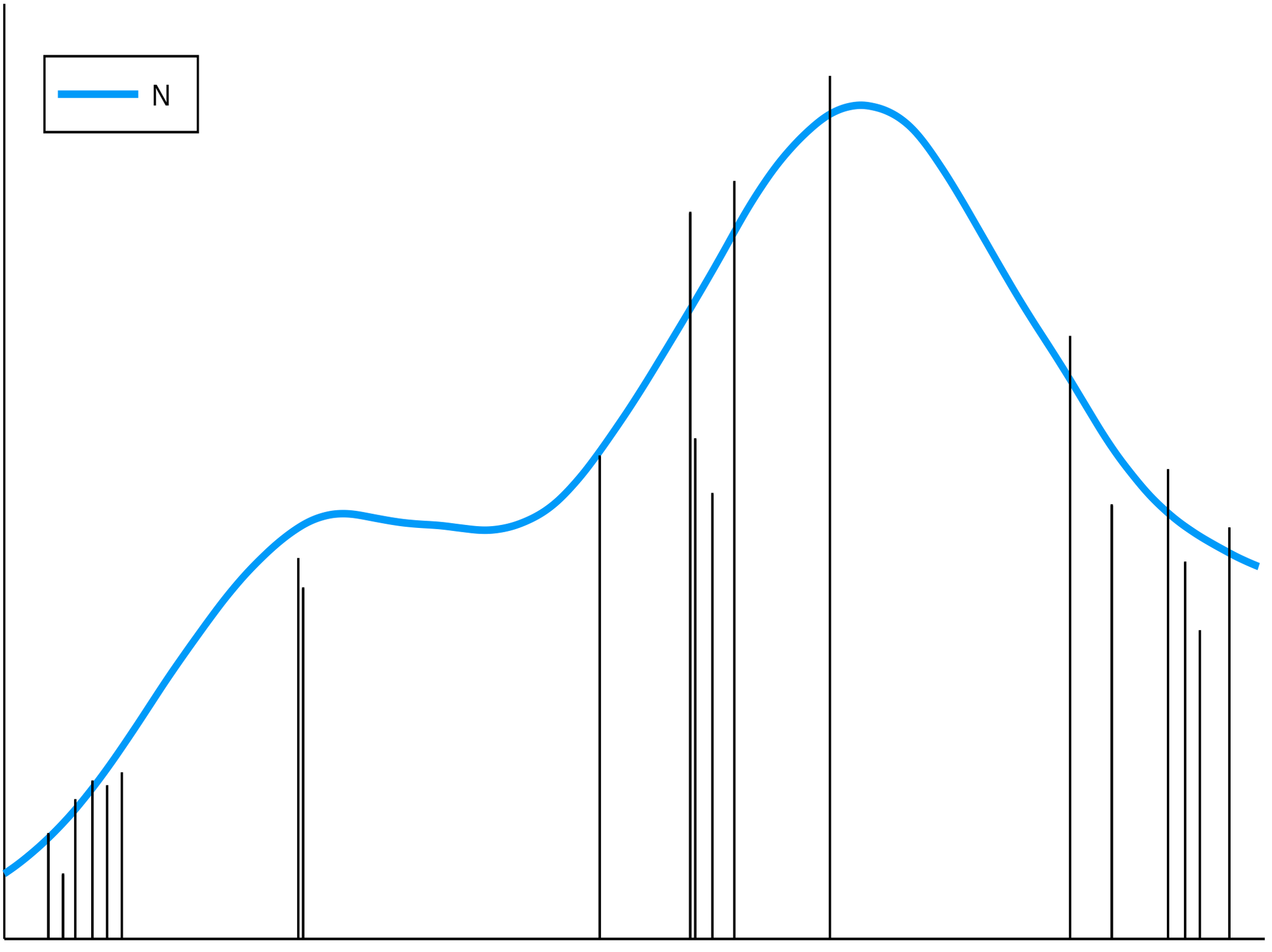


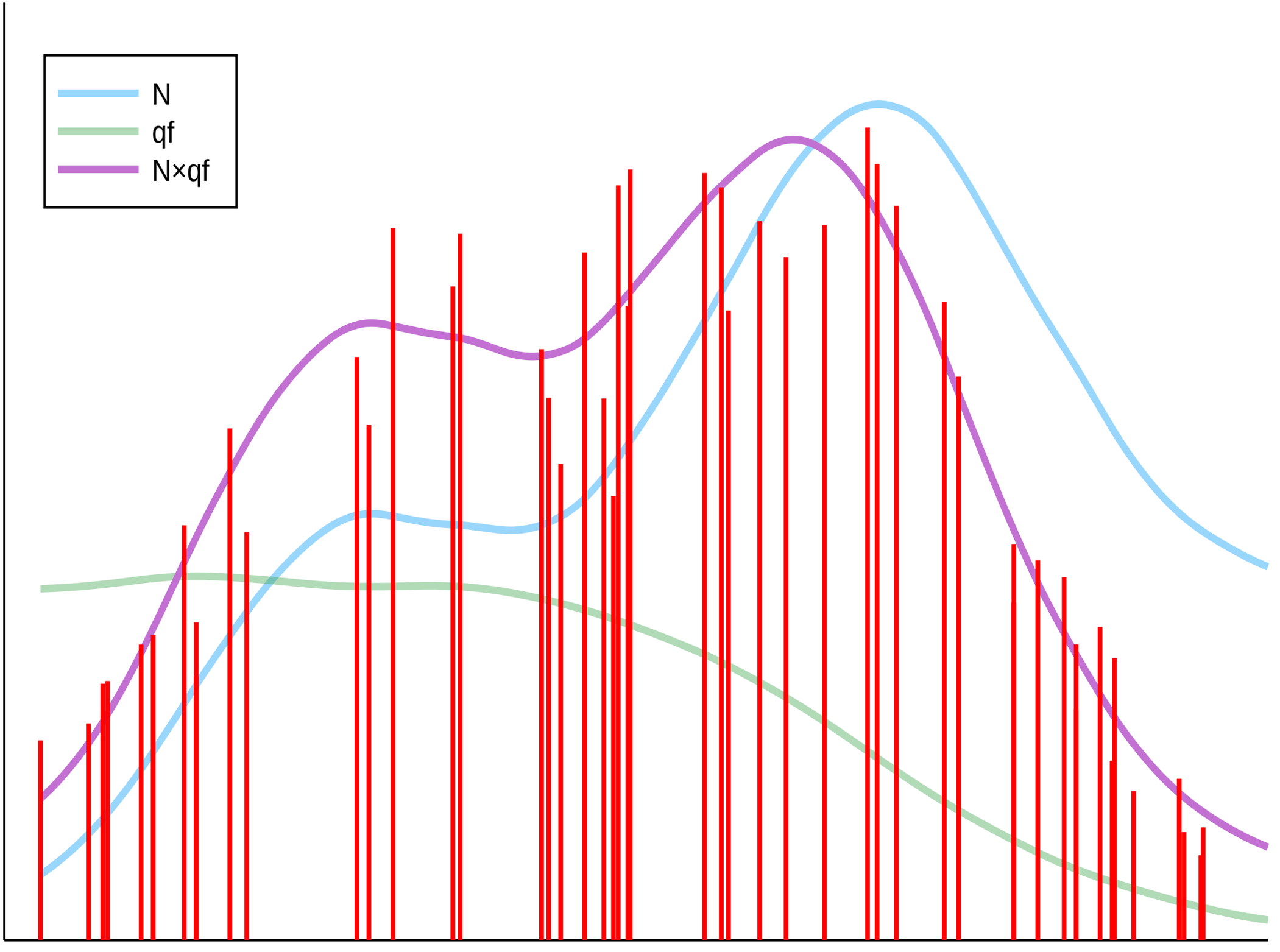


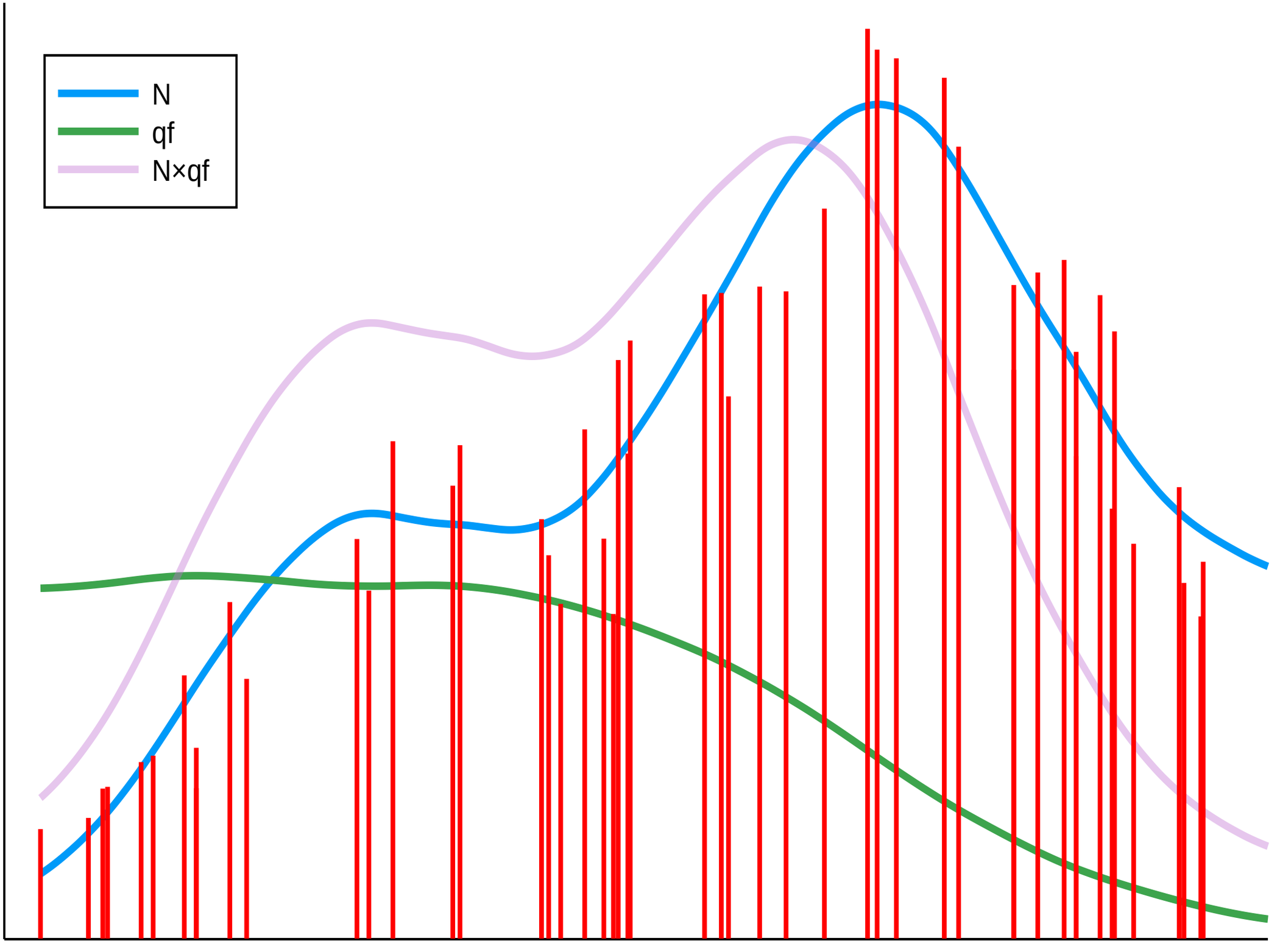

N


N
qs
qf


N
qs
qf
N×qf


N


N
qf
N×qf


N
qf
N×qf

$$C_i > 0 \sim \text{Bernoulli}(p_i)$$

$$C_i \mid C_i > 0 \sim \text{LogNormal}\left(r_i - \frac{\sigma_c^2}{2}, \sigma_c^2\right)$$

$$p_i = 1 - \exp\left(-a_i \times N(\boldsymbol{s_i})\right)$$

$$r_i = \frac{N(\boldsymbol{s_i}) q_v(\boldsymbol{s_i})}{p_i} w_i$$

$$\log N(\boldsymbol{s}_i) \sim \mathrm{MVN}\left(\boldsymbol{\mu}_N, \boldsymbol{Q}_N^{-1}\right)$$

$$\log q_f(\boldsymbol{s}_i) \sim \mathrm{MVN}\left(\boldsymbol{\mu}_f, \boldsymbol{Q}_f^{-1}\right)$$

$$\log q_s(\boldsymbol{s}_i) = 0$$

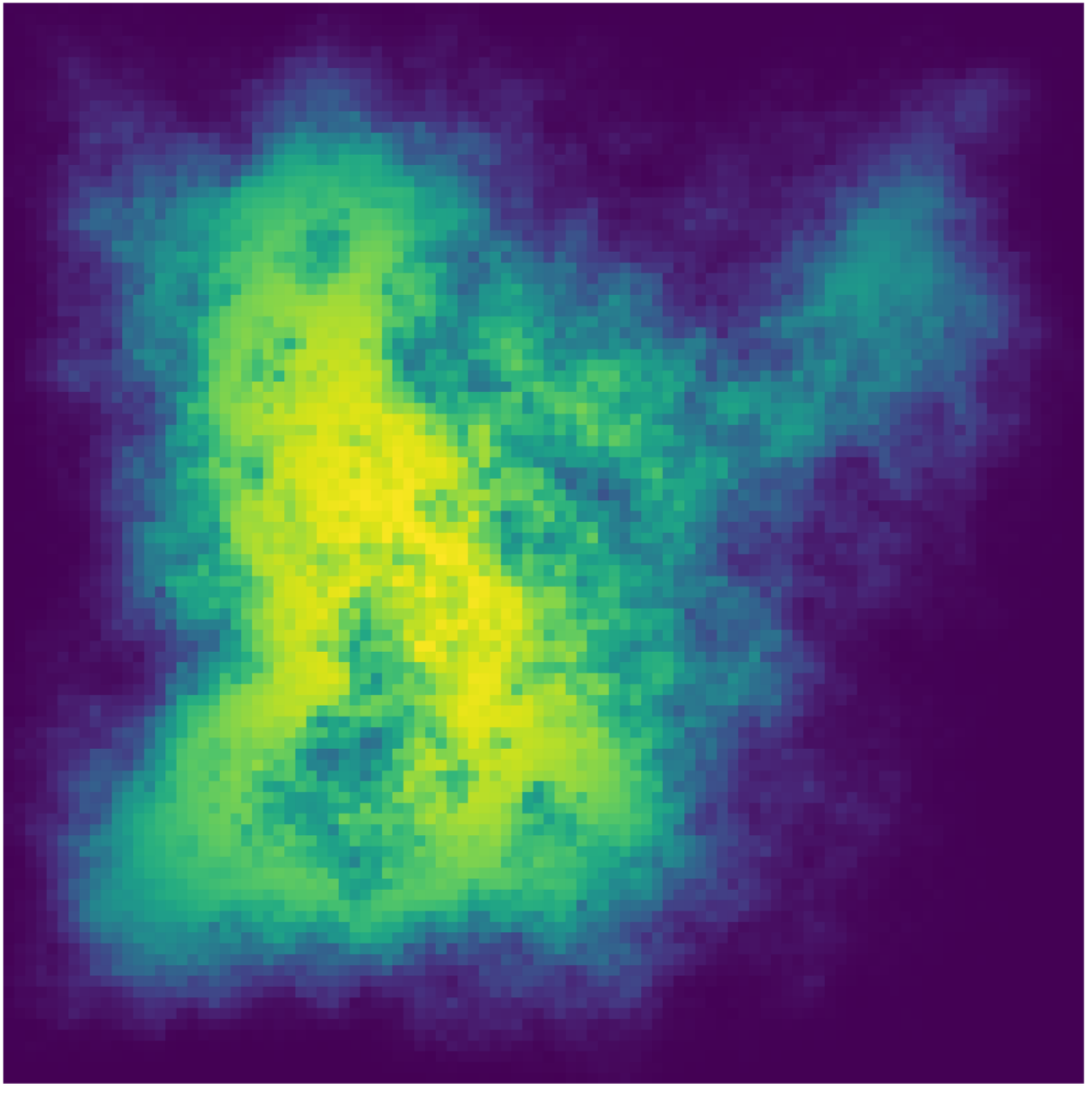
2

WDFW

1

1:https://thecornishfishmonger.co.uk/media/catalog/product/cache/1/image/9df78eab33525d08d6e5fb8d27136e95/d/o/

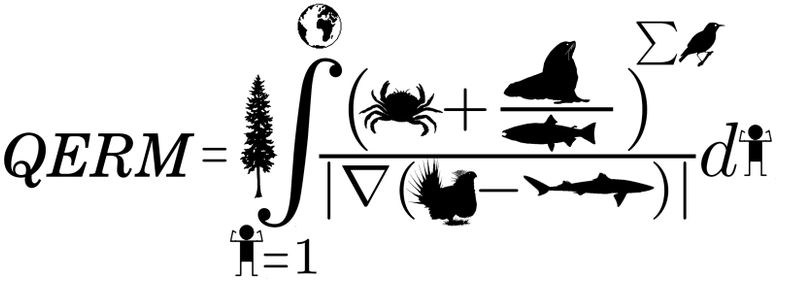
2: http://kylekarpack.com/ellie/wp-content/uploads/2013/03/fullsable_edited.jpg



Acknowledgements

- Jim Thorson
- André Punt

ISEC International Statistical Ecology Conference



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